

## Executive summary

Municipal Solid Waste Management in urban areas has emerged as one of the biggest challenges that our country faces today. The situation is aggravated by rapid urbanisation. Inadequate management of waste has significant negative externalities in terms of public health and environmental outcomes. Besides, it has an adverse impact on the aesthetic appearance of the surroundings.

We conducted a performance audit on ‘Solid Waste Management in Urban Local Bodies’ for the period 2012-13 to 2016-17 to assess whether management of municipal solid waste (MSW) and special waste (including construction and demolition waste) was effective, efficient, and carried out economically and scientifically. It involved examination of the records relating to Solid Waste Management (SWM) in the Directorate of Municipal Administration, District Urban Development Cells in the selected districts, the Karnataka State Pollution Control Board (KSPCB) and its Regional Offices and 35 Urban Local Bodies (ULBs).

The status of devolution of funds for urban governance disclosed that ULBs are dependent on Central/State Governments. In addition, the ULBs do not have powers to appoint personnel – officers/officials. The lack of capacity, both in terms of funds and functionaries, tends to affect the implementation of SWM activities.

The performance audit showed that the test-checked ULBs had not conducted any survey during the period 2010-16 but had adopted per capita estimates that had low level of reliability. The per capita estimates adopted were also not realistic. Action plans and strategy documents envisaged in the State policy formulated in 2004 was not prepared and State policy and strategy in accordance with the SWM Rules, 2016 was yet to be formulated. ULBs neither prepared short term nor long-term plans. Detailed Project Reports (DPRs) prepared during 2016 were deficient. The State Government did not operationalise any waste minimisation strategy during the review period and ULBs did not take up initiatives to promote waste minimisation activity exclusively other than Town Municipal Council, Kumta.

Though requisite committees were formed at the State level, the District and ULB level Committees were not formed in any of the test-checked districts leading to poor support for effective implementation of SWM plans.

Dedicated SWM Cell was absent at ULB level. There was shortage of manpower in all cadres *viz.* Environment Engineer (32 *per cent*); Health Inspectors (70 *per cent*) and *Pourakarmikas* (65 *per cent*).

It appears that the Karnataka Municipalities Act, 1964 and the Karnataka Municipal Corporations Act, 1976 are not in consonance with the Constitution provisions, as contained in the Constitution (74<sup>th</sup> Amendment) Act, 1992, as the Constitution provisions are silent about the approval of the budget while both the Acts specifically mention the role of the State Government in sanctioning/modifying the budget.

None of the test-checked ULBs assessed the requirement of capital and revenue funds for SWM activities until the preparation of DPRs and hence, they were unaware of the resource deficit. Though DPRs prepared during 2016-17 assessed the resource deficit, these failed to address measures for bridging this deficit. But audit did not come across any instance of ULB asking for funds from the State Government.

ULBs did not utilise the funds provided for creation of capital assets by the Central and State Finance Commissions. In comparison, the funds allocated for revenue expenditure were utilised in full by the ULBs. The expenditure on SWM was not commensurate with the funds available, resulting in accumulation of balances to the tune of ₹93.19 crore at the end of March 2017.

There was an appreciable increase in the number of test-checked ULBs collecting SWM cess and the quantum of cess increased significantly during the period 2012-13 to 2016-17. The test-checked ULBs were not collecting cess from places of public worship, occupiers of buildings/shops owned by ULBs and Government buildings as these properties were either exempt from payment of property tax or service charges. ULBs also did not levy cess on vacant lands despite the enabling provisions. Consequently, the ULBs lost revenue of ₹3.07 crore during the period 2012-13 to 2016-17. There was short accounting of cess of ₹5.41 crore in six ULBs and Hubballi-Dharwad Municipal Corporation alone short accounted to the extent of ₹5.11 crore.

Ten ULBs diverted funds of ₹3.81 crore for works and purchase of equipment/machinery/vehicles related to underground drainage purposes and other activities not connected with SWM. City Municipal Council, Sira diverted ₹15.80 lakh resulting in non-achievement of intended objective of constructing bio-methanation plant, purchasing secondary storage containers, etc.

The Information, Education and Communication (IEC) activities did not specifically focus on segregation of special waste and did not emphasise 'not to bury' and 'not to burn' waste.

Segregation of waste at different levels was either absent or partial in all the test-checked ULBs. The State/District/ULBs did not notify the classification of items as domestic hazardous waste and therefore, the need to segregate them separately was not publicised. Consequently, segregation of domestic hazardous waste was not done. Similarly, sanitary waste was not collected separately. Hence, mixed waste was transported to landfills.

Ward-wise collection of waste was absent in six of the test-checked ULBs and it was partial in nine ULBs. The test-checked ULBs did not carry out street sweeping of 6,935 (83 per cent) out of 8,324 km of roads on daily basis. Occupational waste (cut *beedi* leaves and ash) was mixed with regular MSW during collection. Shortage of primary collection vehicles was to the extent of 57 per cent.

Open vehicles and vehicles without necessary partition were used for transportation of waste. Absence of functional global positioning system (GPS) and tracking systems resulted in unauthorised dumping of waste near the bank of River Kabini in City Municipal Council, Nanjangud.

The test-checked ULBs were able to process only 26 *per cent* of waste collected during the review period. This was because of non-creation of required infrastructure and under-utilisation of infrastructure created. Eleven ULBs processed waste through composting and only three ULBs adopted bio-methanation technology.

The ULBs were operating disposal facilities without valid authorisation from KSPCB and necessary environmental clearance. The required buffer zone round the landfill sites were not maintained. Activities that do not conform to the provisions of MSW/SWM Rules were taken up in the landfill sites. Many of the landfills test-checked lacked basic infrastructure such as waste inspection facilities, weighbridge, fire-fighting equipment, toilet, *etc.* There was evidence of unscientific dumping and burning of mixed waste in the landfills.

The above lapses indicate lack of basic monitoring by ULBs and district /State level authorities to ensure compliance to statutory requirements and posed a serious threat to the environment besides leading to health hazards.

The absence of proper segregation of waste led to mixing of MSW with plastic waste, bio-medical waste, e-waste and slaughterhouse waste. The ULBs did not comply with the directions/instructions stipulated under the various acts and rules governing management of special waste.

Plastic waste, though found feasible for use in laying of roads, was not used for the purpose. This not only resulted in mismanagement of plastic waste but also in environmental degradation and death of cattle. Health care institutions were functioning without authorisation and resorting to unauthorised disposal of bio-medical waste.

Test-checked ULBs did not collect and channelise e-waste to authorised dismantlers/recyclers and e-waste was found mixed with MSW. Slaughterhouses in the test checked ULBs were functioning without authorisation and slaughterhouse waste was not managed properly. Thirty-two of the 35 test-checked ULBs were yet to identify sites for disposal of construction and demolition waste. Consequently, construction debris was dumped on roadsides, near water bodies and low-lying areas. Inefficient management of special waste would lead to environment degradation, pollution and health hazards besides affecting the aesthetics of the cities/towns.

### List of recommendations

1. The State Government may expedite preparation of State policy incorporating strategies for waste minimisation and management.
2. The State Government needs to devise better information systems to assist ULBs in preparation of action plans for effective implementation of waste management.
3. The State Government may ensure pro-active and continuous engagement of non-government sector in waste management.
4. The State Government may revise the model agreement for each SWM service/activity considering the deficiencies pointed out. It should be ensured that the terms and conditions of the agreement are clear, free from ambiguity and protect the interests of ULB/Government.
5. The State Government may draw a time-bound plan for ULBs to achieve the highest/preferred level of reliability of Service Level Benchmark (SLB) data.
6. The State Government may ensure that the required District/ULB level Committees are constituted for effective institutional mechanism and implementation of SWM plans.
7. The State Government may devise mandatory modules for training all personnel involved in SWM and ensure coverage of all personnel within a specified period.
8. The Central and State Governments may devise a system for need-based allocation of funds and accord greater flexibility to ULBs in their utilisation to bridge the resource-expenditure gap.
9. While the number of ULBs collecting SWM cess as well as the amount being collected by these ULBs showed a rising trend, it is necessary that ULBs conduct a realistic assessment of the Operation & Maintenance cost involved in SWM and levy and collect SWM cess accordingly with a view to achieving SLBs. The State Government may make suitable amendments to Karnataka Municipalities Act, 1964 for levy and collection of SWM cess as was done in case of Karnataka Municipal Corporations Act, 1976.  
  
ULBs may ensure maximisation of own resources through efficient collection and widening of SWM cess base through measures such as collection of cess from (i) individual units instead of on plinth area; (ii) functions/activities conducted in open spaces; (iii) unorganised sector and levy of interest for belated payment of cess, (iv) railway authorities, *etc.*
10. The State Government should accord required priority to IEC and ensure that IEC activities are appropriate and create awareness about the harmful effects of ineffective SWM management on health and environment. It may explore usage of more effective means of communication for increasing the impact and efficacy of IEC activities.  
  
The IEC activities should be undertaken, keeping in view the particular wastes in particular areas and particular seasons. This may be taken up consequent to assessments and pilots.

11. Segregation should be given greater emphasis by means of publicity and awareness campaigns and holding regular meetings with housing associations and non-government organisations. The State Government should encourage segregation of waste at source by devising a system for incentivising waste generators and collectors for segregation of waste, and should prevent mixing of segregated waste during various stages of SWM.
12. ULBs should ensure that the informal system co-exists and supplements the formal system of waste collection, treatment and disposal and larger percentage of MSW generated is collected. ULBs should also ensure that workers involved in handling waste follow occupational health and safety protocols by wearing safety gear and other protective equipment.
13. The State Government may issue suitable instructions to enable ULBs to manage occupational waste such as beedi leaves, wood ash, *etc.*, effectively and efficiently.
14. The ULBs, in addition to increasing the number of vehicles, should also ensure that the vehicles already procured comply with the statutory requirements of registration, obtaining authorisation, insurance, fitness certificate, *etc.* The vehicles procured should be suitably designed to collect and transport segregated waste efficiently.
15. The State Government/ULBs should maximise processing of waste through complete utilisation of the infrastructure created and encourage adoption of bio-methanation technology by ULBs.
16. The State Government should ensure that all landfill sites are operating with valid authorisation and environmental clearances. It should also enforce and monitor scientific and proper disposal of the unprocessed waste through periodic checks.
17. The State Government may promote use of plastic waste in laying of both urban and rural roads as this enables reduction of considerable amount of waste reaching the landfill and lessens the expenditure on maintenance of roads. It may also explore other areas where plastic can be used.
18. The State Pollution Control Board needs to ensure that all health care institutions, slaughterhouses, recyclers, *etc.*, obtain necessary authorisation for their functioning and enforce adherence to prescribed standards.
19. KSPCB/ULBs may maintain a comprehensive database of health care institutions, slaughterhouses, recyclers, *etc.*, and strictly enforce their adherence to bio-medical waste, plastic, e-waste, slaughterhouse and construction and demolition rules.
20. The State Government and ULBs may put in place suitable systems to enforce Extended Producer Responsibility for specific waste categories as per the relevant rules.